

LETTER TO THE EDITOR



## Vaccination budget in Europe: an update

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### ABSTRACT

Immunization has been shown to be the most effective disease prevention measure of all time, apart from water purification. However, vaccination programs remain highly vulnerable to budget cuts as their benefits may not be immediately and fully identifiable. Therefore, monitoring of healthcare expenditures allocated to prevention and vaccination is critical. This letter updates our previous observation of expenditure for prevention and vaccination programs in eight European countries by adding data from 2014, where available. Prevention and vaccines still entail a relatively low level of investment in European countries. Less than 0.5% of GDP is allocated to disease prevention programs and vaccine expenditure fall below 0.5% of healthcare spending in many of the countries. An adequate level of resources needs to be allocated to ensure efficient and sustainable vaccination programs.

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During the 20<sup>th</sup> century, immunization has contributed to the decline of numerous infectious diseases and their associated mortality.<sup>1</sup> Prevention of disease in children, adults, and the elderly through vaccination represents a unique opportunity to keep people healthy and outside of the healthcare system. For example, seasonal influenza vaccination prevents up to 65,600 hospitalizations and 1.6 to 2.1 million cases of influenza in Europe each year, which can significantly decrease associated healthcare costs and productivity loss.<sup>2</sup> Thus, disease prevention, as part of a comprehensive health promotion program, is a key factor for the long-term sustainability of health systems.

National vaccination campaigns in Europe, which protect the population from up to 20 infectious diseases, require committed resources for vaccine funding, program management, and communication to ensure satisfactory coverage rates and efficient vaccination policies. However, governments are increasingly facing budgetary restrictions, and spending trends are meticulously scrutinized. The funding of public health policies is no exception. This is probably more salient in the prevention and vaccination context. Like other prevention strategies, the benefits of vaccination are not necessarily noticed immediately or fully visible. Instead, they often appear over the longer term while the costs are underwritten in the very short term.

This observation prompted our study documenting the share of health expenditures allocated to prevention and vaccines in European countries, whose results were published in *HV&I* two years ago.<sup>3</sup> Seven Western European countries were selected (Germany, England, France, Italy, and Spain, Sweden and Portugal) to constitute a good mix of vaccines procurement modalities across Europe. Health expenditure data was taken from the Organization for Economic

Co-operation and Development (OECD) online database and available official national sources from 2008 (2006 for England) to the most recent data point available, 2013 or 2014 typically at the time.

We reported that no country spent more than 0.5% of its health care budget on vaccines, with the proportion ranging from 0.25% in Spain (2012) and France (2013) to 0.47% in Germany (2014). We also noticed that vaccines spending sharply decreased in Italy (−9.6%, but with data only available for 2013 and 2014), Germany (−6.2% per year from 2008 to 2014), Spain (−6.7% per year from 2008 to 2012) and France (−4.2% per year from 2008 to 2013). Only Sweden (+ 5.9% per year from 2011 to 2013) and England (+ 18.9% per year from 2006/07 to 2009/10) increased their spending on vaccines.<sup>3</sup>

Since then, two more years of data have become available. But above all, new initiatives have been introduced into vaccination policies in Europe such as the recent initiatives from the French and Italian authorities to make most pediatric vaccines mandatory to curb the worrying decline of coverage rates.<sup>4,5</sup>

At the European level, the Commission recently proposed a Council Recommendation with 20 concrete actions for Member States and the Commission to increase cooperation against vaccine-preventable diseases and address declining levels of vaccine coverage and immunization gaps.<sup>6,7</sup>

For these reasons, we believe that it is important to scrutinize the evolution of the share of health expenditure allocated to prevention and immunization policies. In this Letter, we provide the Journal's Editor and audience with an update on the observed prevention and vaccines expenditures evolution over a 10 year period, where available.

In addition to the seven European countries included in the original search (Germany, UK, France, Italy, Spain, Sweden and Portugal), we included Poland in this updated report to include an Eastern Europe perspective. We also broadened the temporal horizon of the evolution of expenses by starting the observation in 2005.

Healthcare, prevention, and vaccine spending were searched in the OECD online database, spanning from 2005 to the most recent data point available (typically 2015 or 2016). We also queried this time the Eurostat online database. Total current healthcare expenditures, prevention, and public health expenditures and the prevention of communicable diseases expenditures were extracted when available for the eight countries from these two supranational datasets (data available from the authors). In both cases, data available for analysis were once again incomplete and varied according to different levels of completeness depending on the country. Total current healthcare expenditures were available for all countries in both datasets. Prevention expenditures were available for all countries except for Italy and the UK. Prevention of communicable diseases expenditures were not available anymore in OECD and only available until 2012 for Germany, France, Spain, and Sweden in Eurostat. Also, the national sources used in the previous analysis were searched again and the most recent data or reports available were retrieved. For the UK, a comprehensive report on UK health accounts was retrieved for the year 2014 and was used in lieu of the scattered reports identified for England in the previous search. Table 1 displays and references all sources used for this update.

We computed for each country the proportion of their GDP and of their healthcare spending allocated to prevention and to vaccines. We also calculated the vaccines cost per capita. The evolution of vaccines spending over time was described in actuary terms using the compound annual growth rate (CAGR), which represents the constant year-to-year growth rate of an investment over a specific time period.<sup>30</sup>

Based on the latest data point available, the proportion of GDP allocated to prevention ranges from 0.07% in Poland in 2016 to 0.41% in the in 2014 (Figure 1a). The cost of vaccines per capita ranges from € 3 in Spain in 2013 to € 21 in Sweden in 2015 (Figure 1b).

Figure 2 shows the proportion of national healthcare spending devoted to prevention and to vaccines for the first, the last, and the median data point available since 2005. Prevention accounted for 0.90% to 4.66% of healthcare spending over the 2005–2016 period. Vaccines accounted for less than 0.50% of healthcare spending, with a range of 0.15% – 0.50% in all countries except Germany, where 0.62% of healthcare spending was allocated to vaccines in 2016.

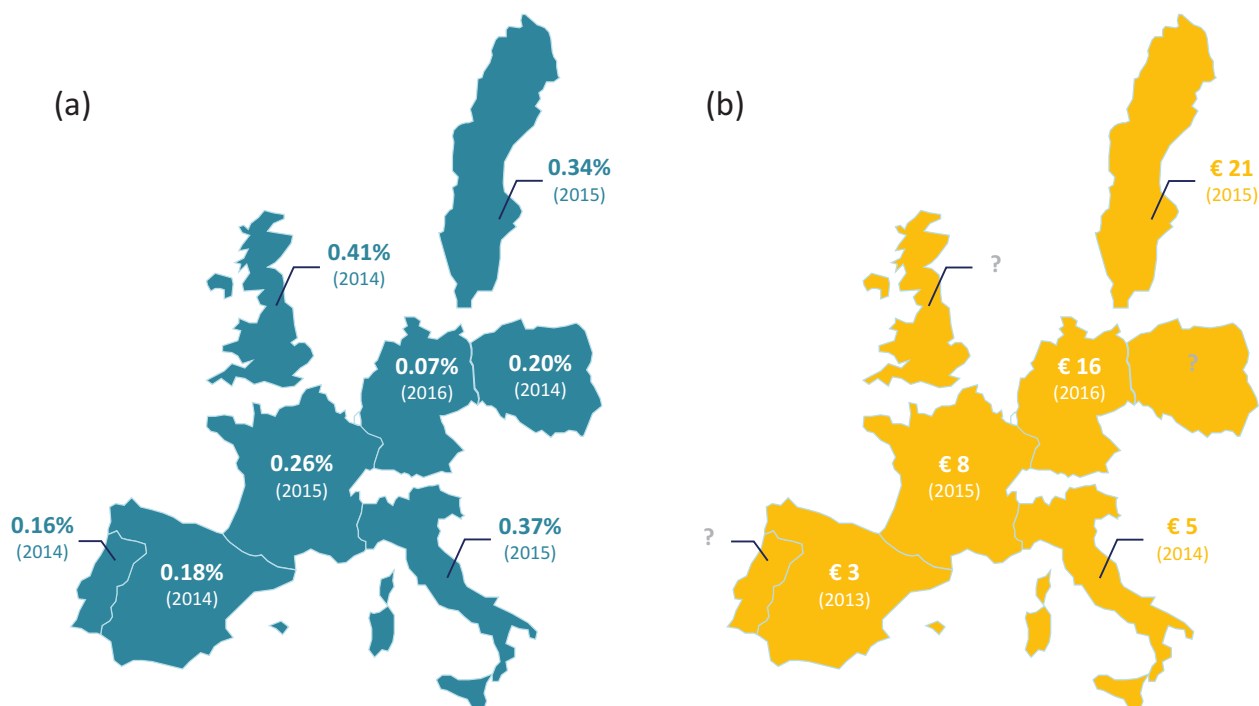
The comparative evolution of healthcare, prevention, and vaccines spending per capita is presented in Figure 3. Evolutions are trended using the CAGR between the first and the last data point available since 2005 for both prevention and vaccines. Prevention spending per capita has decreased in most countries; in France by –0.2% per year (between 2008 and 2015), Germany by –1.7% per year (between 2008 and 2016), Spain by –3.7% per year (between 2008 and 2013) and in Portugal by –4.6% per year (between 2008 and 2014). Only Sweden, Poland and Italy have increased their prevention spending per capita by + 5.4% (between 2005 and 2015), + 6.4% (between 2009 and 2014) and + 0.7% (between 2012 and 2014) per year, respectively.

This decreasing trend is even more dramatic for vaccines spending per capita with annual rates of –5.4%, –6.0% and –9.9% in France over 2008–2015, Italy over 2012–2014 and Spain over 2008–2013, respectively. However, it should be noted that only three years of data were available for Italy on vaccines spending and thus caution should be exercised when interpreting spending per capita over such short time period. Sweden is the only country who has increased the part of its healthcare investment per capita allocated to vaccines (+ 5.4% per year between 2005 and 2015). Of note, France and Germany concomitantly increased their healthcare

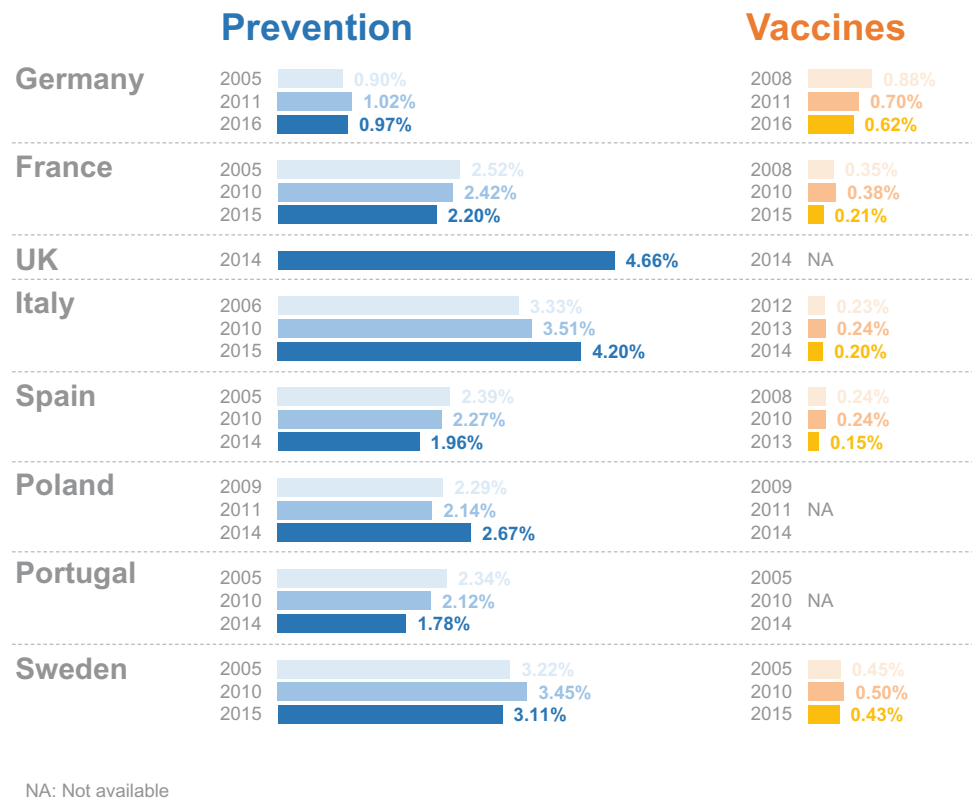
**Table 1.** Data sources.

Country	Sources	Date accessed	References.
Germany	Bundesministerium für Gesundheit	11.04.2017	8
	DeStatis – Statistisches Bundesamt	18.05.2017	9
France	Ministère des Affaires Sociales et de la Santé – Etudes et Statistiques	11.04.2017	10
	Direction de la Recherche, des Etudes, de l’Evaluation et des Statistiques – Les dépenses de santé en 2014	Edition 2015	11
	Direction de la Recherche, des Etudes, de l’Evaluation et des Statistiques – Les dépenses de santé en 2015	Edition 2016	12
	Institut National de la Statistique et des Etudes Economiques	16.05.2017	13
Spain	Ministerio de Sanidad, Servicios Sociales e Igualdad – Sistema de Cuentas de Salud	12.04.2017	14
	Instituto Nacional de Estadística	16.05.2017	15
	A tu Salud. La crisis de lleva por delante las vacunas	12.05.2013	16
Sweden	Statistiska Centralbyrån – System of Health Accounts 2015	12.04.2017	17
	Statistiska Centralbyrån	16.05.2017	18
Portugal	Instituto Nacional de Estatística – Portuguese National Accounts	12.04.2017	19
	Instituto Nacional de Estatística	16.05.2017	20
Poland	Central Statistical Office of Poland – Health and health care in 2015	12.04.2017	21
	Central Statistical Office of Poland	24.05.2017	22
Italy	Meridiano Sanita – Le coordinate della salute	Rapporto 2015	23
	Meridiano Sanita – Le coordinate della salute	Rapporto 2016	24
	Meridiano Sanita – Le coordinate della salute	Rapporto 2017	25
	Italian National Institute of Statistics	24.05.2017	26
	UK Office of National Statistics – UK Health Accounts 2014	21.04.2017	27
UK			28
Eurostat		11.04.2017 & 30.05.2017	29
OECD		11.04.2017 & 30.05.2017	29

date accessed for Eurostat, ref. 28: 11.04.2017 & 30.05.2017 and date accessed for OECD, ref. 29: 11.04.2017 & 30.05.2017



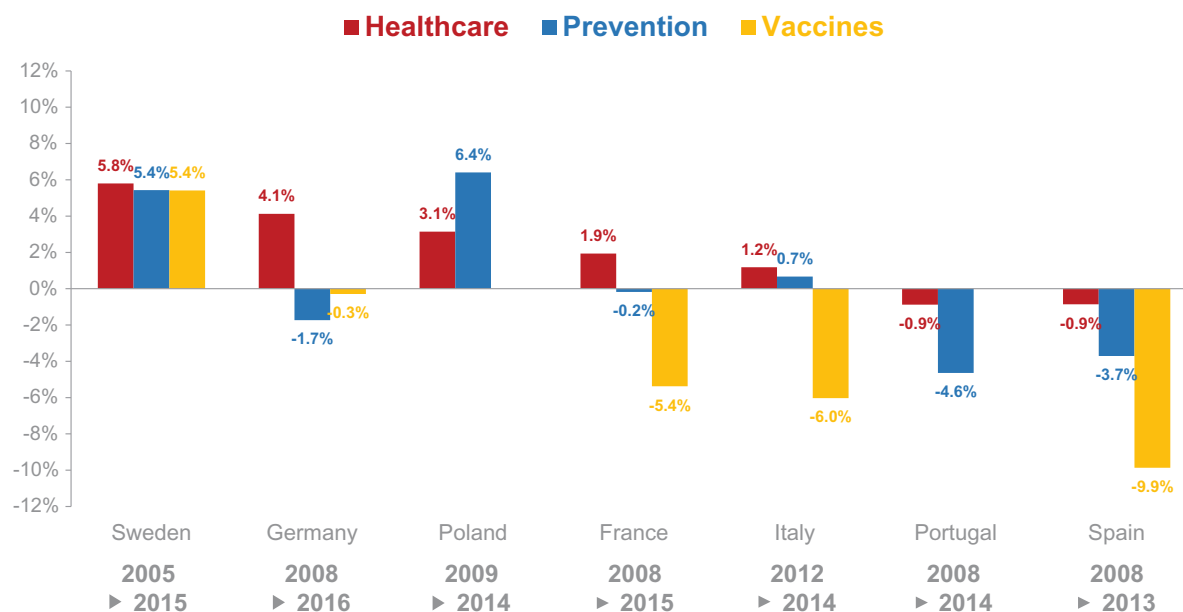
**Figure 1.** Proportion of GDP allocated to prevention and public health services (a) and cost of vaccination per capita (b). Estimates are from national sources and the year within brackets represent the latest year for which data are available.



**Figure 2.** Proportion of national healthcare spending devoted to prevention and to vaccines, according to national sources.

spending and decreased their prevention and vaccines spending over 2008–2015/16. Although immunization is widely recognized as one of the most cost-effective public health interventions for disease

prevention, our updated observation shows that prevention and vaccines still entail a relatively low level of investment in European countries and have even continued to decrease. Less than 0.5% of GDP is allocated to prevention and vaccines



**Figure 3.** Evolution of healthcare, prevention and vaccines expenditure per capita. Estimates are from national sources and the % figures are the CAGRs over the corresponding time period.

account for a minimal part of the healthcare spending, falling below 0.5% in many countries. Sweden remains an exception and appears to be the only country that has increased its investment in immunization over the last decade.

It should be noted that the scarcity of data was a significant limitation for this observation. The lack of disclosure of the elements included in prevention spending and vaccine spending was also a limiting factor. A clear definition of the cost components of vaccination was lacking in most instances. We may wonder to what extent the expenses devoted to vaccination are actually split between vaccines purchase and administration as well as vaccination campaign management and communication. Another limitation was the lack of homogeneity of the data, further hindered by the discontinuation of the OECD infectious disease category in 2014. Indeed, even if OECD and Eurostat data offer some degree of standardization, data remain incomplete (e.g. UK, Italy, Poland, or Portugal) and available only until 2012 (Eurostat) or 2014 (OECD).

Therefore, we again emphasize the need for continued, robust, and homogenous monitoring of prevention and vaccine expenditure in European countries. This will also be important to evaluate both the public health and budgetary impact of the expanded vaccination policies in France and Italy.

Strengthened vaccination programs are also needed to meet the objectives set within the EU Commission proposal to increase vaccine coverage rates and decrease burden of vaccine-preventable diseases in Europe. Improving uptake of vaccination is critical in periods when governments are looking for solutions for more efficient healthcare resource use, especially in light of the significant growth of the ageing population in Europe. However, this will require appropriate

budgets and resources to be allocated to vaccination programs which “*should be regarded as an essential and smart investment in health, given its broader economic impact and societal value*”.<sup>7</sup>

### Disclosure of potential conflicts of interest

No potential conflicts of interest were disclosed.

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